Space Weather Forecast

Issued on Friday, 20 October 2023 at 13:26 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Weak Coronal Mass Ejection arrivals possible, with a slight chance of isolated Minor Geomagnetic Storm intervals throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low over the past 24 hours, with only low level Common class flares. There are currently three numbered regions on the visible disc and one unnumbered regions, all of which are relatively small and simple, and either stable or in decline. A Coronal Mass Ejections (CMEs) is apparent in imagery, starting around 19/1800 UTC from the southeast quadrant from a filament eruption. This event is unlikely to be Earth directed.

Solar Wind / Geomagnetic Activity: The solar wind started at slightly elevated levels around 430 km/s and soon declined to background levels and are now around 370 km/s. The solar wind's magnetic field was weak, and the important north-south component was also weak and mostly southwards orientated. This resulted in geomagnetic activity at Quiet levels.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low solar activity is likely to continue. There is a Slight Chance of an isolated Moderate flare through the period, with any significant flares most likely from a small region in the western hemisphere, but also from regions currently on the far side of the Earth which may rotate onto the Earth facing side within the forecast period.

Solar Wind / Geomagnetic Activity: The geomagnetic forecast carries high uncertainty. There are two or three potentially Earth directed CMEs and therefore today, tomorrow and into day 3 (20-22nd Oct) there is possibility of geomagnetic activity becoming enhanced. A potential weak solar wind enhancement may arrive over the next two days, but confidence is low as the coronal hole feature is small and diminishing.
Geomagnetic activity is likely to be Quiet for much of the time, but with spells of Unsettled to Active activity and a Chance or Slight Chance of Minor Storm intervals if and when any glancing CMEs arrive.

Energetic Particles / Solar Radiation: No solar radiation storms are expected.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	20	30	10	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	5	5	10	10
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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